

SUSTAINABLE CHEMISTRY RESEARCH AND DEVELOPMENT ACT OF 2019

NOVEMBER 26, 2019.—Committed to the Committee of the Whole House on the
State of the Union and ordered to be printed

Ms. JOHNSON of Texas, from the Committee on Science, Space, and
Technology, submitted the following

R E P O R T

[To accompany H.R. 2051]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science, Space, and Technology, to whom was referred the bill (H.R. 2051) to provide for Federal coordination of activities supporting sustainable chemistry, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

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I. AMENDMENT

The amendment is as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the “Sustainable Chemistry Research and Development Act of 2019”.

SEC. 2. FINDINGS.

Congress finds that—

(1) Congress recognized the importance and value of sustainable chemistry and the role of the Federal Government in section 114 of the American Innovation and Competitiveness Act (Public Law 114–329);

(2) sustainable chemistry and materials transformation is a key value contributor to business competitiveness across many industrial and consumer sectors;

(3) companies across hundreds of supply chains critical to the American economy are seeking to reduce costs and open new markets through innovations in manufacturing and materials, and are in need of new innovations in chemistry, including sustainable chemistry;

(4) sustainable chemistry can improve the efficiency with which natural resources are used to meet human needs for chemical products while avoiding environmental harm, reduce or eliminate the emissions of and exposures to hazardous substances, minimize the use of resources, and benefit the economy, people, and the environment; and

(5) a recent report by the Government Accountability Office (GAO–18–307) found that the Federal Government could play an important role in helping realize the full innovation and market potential of sustainable chemistry technologies, including through a coordinated national effort on sustainable chemistry and standardized tools and definitions to support sustainable chemistry research, development, demonstration, and commercialization.

SEC. 3. NATIONAL COORDINATING ENTITY FOR SUSTAINABLE CHEMISTRY.

(a) **ESTABLISHMENT.**—Not later than 180 days after the date of enactment of this Act, the Director of the Office of Science and Technology Policy shall convene an interagency entity (referred to in this Act as the “Entity”) under the National Science and Technology Council with the responsibility to coordinate Federal programs and activities in support of sustainable chemistry, including those described in sections 5 and 6.

(b) **COORDINATION WITH EXISTING GROUPS.**—In convening the Entity, the Director of the Office of Science and Technology Policy shall consider overlap and possible coordination with existing committees, subcommittees, or other groups of the National Science and Technology Council, such as—

- (1) the Committee on Environment;
- (2) the Committee on Technology;
- (3) the Committee on Science; or
- (4) related groups or subcommittees.

(c) **CO-CHAIRS.**—The Entity shall be co-chaired by the Office of Science and Technology Policy and a representative from the Environmental Protection Agency, the National Institute of Standards and Technology, the National Science Foundation, or the Department of Energy, as selected by the Director of the Office of Science and Technology Policy.

(d) **AGENCY PARTICIPATION.**—The Entity shall include representatives, including subject matter experts, from the Environmental Protection Agency, the National Institute of Standards and Technology, the National Science Foundation, the Department of Energy, the Department of Agriculture, the Department of Defense, the National Institutes of Health, the Centers for Disease Control and Prevention, the Food and Drug Administration, and other related Federal agencies, as appropriate.

(e) **TERMINATION.**—The Entity shall terminate on the date that is 10 years after the date of enactment of this Act.

SEC. 4. ROADMAP FOR SUSTAINABLE CHEMISTRY.

(a) **ROADMAP.**—Not later than 2 years after the date of enactment of this Act, the Entity shall—

(1) consult with relevant stakeholders including representatives from industry, academia, the Federal Government, and international entities to develop and update as needed a consensus definition of “sustainable chemistry” to guide the activities under this Act;

(2) develop a working framework of attributes characterizing and metrics for assessing sustainable chemistry, as described in subsection (b);

(3) assess the state of sustainable chemistry in the United States as a key benchmark from which progress under the activities described in this Act can be measured, including assessing key sectors of the United States economy, key technology platforms, commercial priorities, and barriers to innovation;

(4) coordinate and support Federal research, development, demonstration, technology transfer, commercialization, education, and training efforts in sustainable chemistry, including budget coordination and support for public-private partnerships, as appropriate;

(5) identify methods by which the Federal agencies can facilitate the development of incentives for development, consideration and use of sustainable chemistry processes and products, including innovative financing mechanisms;

(6) identify major scientific challenges, roadblocks, or hurdles to transformational progress in improving the sustainability of the chemical sciences; and

(7) identify other opportunities for expanding Federal efforts in support of sustainable chemistry.

(b) CHARACTERIZING AND ASSESSING SUSTAINABLE CHEMISTRY.—The Entity shall develop a working framework of attributes characterizing and metrics for assessing sustainable chemistry for the purposes of carrying out the Act. In developing this framework, the Entity shall—

(1) seek advice and input from stakeholders as described in subsection (c);

(2) consider existing definitions of or frameworks characterizing and metrics for assessing sustainable chemistry already in use at Federal agencies;

(3) consider existing definitions of or frameworks characterizing and metrics for assessing sustainable chemistry already in use by international organizations of which the United States is a member, such as the Organisation for Economic Co-operation and Development; and

(4) consider any other appropriate existing definitions of or frameworks characterizing and metrics for assessing sustainable chemistry.

(c) CONSULTATION.—In carrying out the duties described in subsections (a) and (b), the Entity shall consult with stakeholders qualified to provide advice and information to guide Federal activities related to sustainable chemistry through workshops, requests for information, and other mechanisms as necessary. The stakeholders shall include representatives from—

(1) business and industry (including trade associations and small- and medium-sized enterprises from across the value chain);

(2) the scientific community (including the National Academies of Sciences, Engineering, and Medicine, scientific professional societies, and academia);

(3) the defense community;

(4) State, tribal, and local governments, including nonregulatory State or regional sustainable chemistry programs, as appropriate;

(5) nongovernmental organizations; and

(6) other appropriate organizations.

(d) REPORT TO CONGRESS.—

(1) IN GENERAL.—Not later than 3 years after the date of enactment of this Act, the Entity shall submit a report to the Committee on Environment and Public Works, the Committee on Commerce, Science, and Transportation, and the Committee on Appropriations of the Senate, and the Committee on Science, Space, and Technology, the Committee on Energy and Commerce, and the Committee on Appropriations of the House of Representatives. In addition to the elements described in subsections (a) and (b), the report shall include—

(A) a summary of federally funded, sustainable chemistry research, development, demonstration, technology transfer, commercialization, education, and training activities;

(B) a summary of the financial resources allocated to sustainable chemistry initiatives;

(C) an assessment of the current state of sustainable chemistry in the United States, including the role that Federal agencies are playing in supporting it;

(D) an analysis of the progress made toward achieving the goals and priorities of this Act, and recommendations for future program activities;

(E) an assessment of the benefits of expanding existing, federally supported, regional innovation and manufacturing hubs, centers, and institutes to include sustainable chemistry and the value of directing the creation of 1 or more dedicated sustainable chemistry centers of excellence, hubs, or institutes; and

(F) an evaluation of steps taken and future strategies to avoid duplication of efforts, streamline interagency coordination, facilitate information sharing, and spread best practices among participating agencies.

(2) SUBMISSION TO GAO.—The Entity shall also submit the report described in paragraph (1) to the Comptroller General of the United States for consideration in future Congressional inquiries.

SEC. 5. AGENCY ACTIVITIES IN SUPPORT OF SUSTAINABLE CHEMISTRY.

(a) IN GENERAL.—The agencies participating in the Entity shall carry out activities in support of sustainable chemistry, as appropriate to the specific mission and programs of each agency.

(b) ACTIVITIES.—The activities described in subsection (a) shall—

(1) incorporate sustainable chemistry into existing research, development, demonstration, technology transfer, commercialization, education, and training programs, that the agency determines to be relevant, including consideration of—

(A) merit-based competitive grants to individual investigators and teams of investigators, including, to the extent practicable, early career investigators for research and development;

(B) grants to fund collaborative research and development partnerships among universities, industry, and nonprofit organizations;

(C) coordination of sustainable chemistry research, development, demonstration, and technology transfer conducted at Federal laboratories and agencies;

(D) incentive prize competitions and challenges in coordination with such existing Federal agency programs; and

(E) grants, loans, and loan guarantees to aid in the technology transfer and commercialization of sustainable chemicals, materials, processes, and products;

(2) collect and disseminate information on sustainable chemistry research, development, technology transfer, and commercialization, including information on accomplishments and best practices;

(3) raise awareness of sustainable chemistry concepts through public outreach activities;

(4) expand the education and training of students at all levels of education, professional scientists and engineers, and other professionals involved in all aspects of sustainable chemistry and engineering appropriate to that level of education and training, including through—

(A) partnerships with industry as described in section 6;

(B) support for the integration of sustainable chemistry principles into elementary, secondary, undergraduate, and graduate chemistry and chemical engineering curriculum and research training, as appropriate to that level of education and training; and

(C) support for integration of sustainable chemistry principles into existing or new professional development opportunities for professionals including teachers, faculty, and individuals involved in laboratory research, (product development, materials specification and testing, life cycle analysis, and management);

(5) as relevant to an agency's programs, examine methods by which the Federal agencies, in collaboration and consultation with the National Institute of Standards and Technology, may facilitate the development or recognition of validated, standardized tools for performing sustainability assessments of chemistry processes or products;

(6) through programs identified by an agency, support (including through technical assistance, participation, financial support, communications tools, awards, or other forms of support) outreach and dissemination of sustainable chemistry advances such as non-Federal symposia, forums, conferences, and publications in collaboration with, as appropriate, industry, academia, scientific and professional societies, and other relevant groups;

(7) provide for public input and outreach to be integrated into the activities described in this section by the convening of public discussions, through mechanisms such as public meetings, consensus conferences, and educational events, as appropriate;

(8) within each agency, develop metrics to track the outputs and outcomes of the programs supported by that agency; and

(9) incentivize or recognize actions that advance sustainable chemistry products, processes, or initiatives, including through the establishment of a nationally recognized awards program through the Environmental Protection Agency to identify, publicize, and celebrate innovations in sustainable chemistry and chemical technologies.

(c) LIMITATIONS.—Financial support provided under this section shall—

(1) be available only for pre-competitive activities; and

(2) not be used to promote the sale of a specific product, process, or technology, or to disparage a specific product, process, or technology.

(d) AGENCY BUDGET REPORT.—For each of fiscal years 2021 through 2030, not later than 90 days after submission of the President's annual budget request, the Entity shall prepare and submit to the Committee on Environment and Public Works, the Committee on Commerce, Science, and Transportation, and the Committee on Appropriations of the Senate, and the Committee on Science, Space, and Technology, the Committee on Energy and Commerce, and the Committee on Appropriations of the House of Representatives a report that includes a summarized agency budget in support of the activities under this Act for the fiscal year to which such budget request applies, and for the then current fiscal year, including a breakout of spending for each agency participating in such activities.

SEC. 6. PARTNERSHIPS IN SUSTAINABLE CHEMISTRY.

(a) IN GENERAL.—The agencies participating in the Entity may facilitate and support, through financial, technical, or other assistance, the creation of partnerships between institutions of higher education, nongovernmental organizations, consortia, or companies across the value chain in the chemical industry, including small- and medium-sized enterprises, to—

(1) create collaborative sustainable chemistry research, development, demonstration, technology transfer, and commercialization programs; and

(2) train students and retrain professional scientists, engineers, and others involved in materials specification on the use of sustainable chemistry concepts and strategies by methods, including—

(A) developing or recognizing curricular materials and courses for undergraduate and graduate levels and for the professional development of scientists, engineers, and others involved in materials specification; and

(B) publicizing the availability of professional development courses in sustainable chemistry and recruiting professionals to pursue such courses.

(b) PRIVATE SECTOR PARTICIPATION.—To be eligible for support under this section, a partnership in sustainable chemistry shall include at least one private sector organization.

(c) SELECTION OF PARTNERSHIPS.—In selecting partnerships for support under this section, the agencies participating in the Entity shall also consider the extent to which the applicants are willing and able to demonstrate evidence of support for, and commitment to, the goals outlined in the roadmap and report described in section 4.

(d) PROHIBITED USE OF FUNDS.—Financial support provided under this section may not be used—

(1) to support or expand a regulatory chemical management program at an implementing agency under a State law;

(2) to construct or renovate a building or structure; or

(3) to promote the sale of a specific product, process, or technology, or to disparage a specific product, process, or technology.

SEC. 7. PRIORITIZATION.

In carrying out this Act, the Entity shall focus its support for sustainable chemistry activities on those that achieve, to the highest extent practicable, the goals outlined in the Act.

SEC. 8. RULE OF CONSTRUCTION.

Nothing in this Act shall be construed to alter or amend any State law or action with regard to sustainable chemistry, as defined by the State.

II. PURPOSE OF THE BILL

The purpose of the bill is to provide for Federal coordination of activities supporting sustainable chemistry.

III. BACKGROUND AND NEED FOR THE LEGISLATION

The chemical industry is one of the largest manufacturing industries in the United States. Using raw materials, chemical companies manufacture a myriad of chemical products including acids, fibers, dyes, solvents, synthetic rubber, and plastics. With increasing global competition, innovation is crucial for companies to satisfy increasingly sophisticated and environmentally-conscientious consumers.

Sustainable chemistry has the goal of allowing society to meet current environmental, human health, economic, and societal needs without compromising the health and safety of future generations. Rather than focusing on cleanup and control of waste and hazardous materials, sustainable chemistry emphasizes redesigning industrial products and processes to reduce or eliminate hazards at their source by reducing toxicity, quantities of waste, and energy consumption.

Progress in the widespread adoption of sustainable chemistry principles has been slow. Key challenges include (1) Lack of research and technology development; (2) Industrial integration barriers; (3) Up-front investments required; (4) Lack of coordination across the Federal government; (4) Lack of consensus regarding how sustainability should be measured and assessed; (5) Need for improved sustainable chemistry education.

The *Sustainable Chemistry Research and Development Act of 2019* establishes an interagency entity led by the Office of Science and Technology Policy. The entity is charged with coordinating Federal programs and activities in support of sustainable chemistry and developing a roadmap for sustainable chemistry, including a framework of attributes characterizing sustainable chemistry and assessing the state of sustainable chemistry in the United States. The entity is also directed to identify methods by which Federal agencies can incentivize sustainable chemistry activities, challenges to sustainable chemistry progress, and opportunities for expanding Federal sustainable chemistry efforts.

IV. COMMITTEE HEARINGS

On July 25, 2019 the Subcommittee on Research and Technology held a hearing to assess the challenges and opportunities for expanding the use of sustainable chemicals, production processes, and stewardship practices throughout the chemical science and engineering enterprise. The Committee examined the research, technologies, and strategies that are needed to support the adoption of sustainable chemistry innovations. The Committee also received testimony on the *Sustainable Chemistry Research and Development Act of 2019*. The witnesses were supportive of the legislation and made recommendations for how to improve it.

V. COMMITTEE CONSIDERATION AND VOTES

On April 3, 2019, Representative Daniel Lipinski and Representative John Moolenaar introduce H.R. 2051, the *Sustainable Chemistry Research and Development Act of 2019*. The bill was referred to the House Committee on Science, Space, and Technology and the House Committee on the Budget.

On October 17, 2019, the Committee on Science, Space, and Technology met to consider H.R. 2051. Representative Lipinski offered an amendment in the nature of a substitute to incorporate stakeholder feedback. The amendment incorporated direction to the interagency entity to develop a consensus definition of the term “sustainable chemistry” and a framework of metrics for assessing sustainable chemistry to guide the activities under the Act. It also provided guidance on agency activities to promote the incorporation of sustainable chemistry in their public outreach and chemistry

education activities. Finally, the amendment added a provision to terminate the interagency entity and the budget reporting requirement 10 years after the date of enactment. *The amendment was agreed to on a voice vote.* Chairwoman Eddie Bernice Johnson moved that the Committee favorably report the bill, H.R. 2051, to the House with the recommendation that the bill be approved. *The motion was agreed to by a voice vote.*

VI. SUMMARY OF MAJOR PROVISIONS OF THE BILL

H.R. 2051 directs the Director of OSTP to convene an interagency entity under the National Science and Technology Council to coordinate Federal agency programs and activities in support of sustainable chemistry. The Act directs the interagency entity to consult with stakeholders to develop a roadmap to guide the activities under the Act, including a consensus definition of “sustainable chemistry”, an assessment of the state of sustainable chemistry in the United States, and coordination of Federal activities in sustainable chemistry.

The Act provides guidance for agency activities in support of sustainable chemistry, including incorporating sustainable chemistry into existing programs, incorporating sustainable chemistry into public outreach and chemistry education activities, and incentivizing actions that advance sustainable chemistry products, processes, or initiatives. The Act prohibits agencies from supporting or expanding regulatory programs and from promoting the sale of or disparaging a specific product, process, or technology under the Act.

VII. SECTION-BY-SECTION ANALYSIS (BY TITLE AND SECTION)

Section 1. Short title

The Sustainable Chemistry Research and Development Act of 2019

Section 2. Findings

Highlights the importance of sustainable chemistry and outlines the Federal government’s role in supporting sustainable chemistry research, development, demonstration, and commercialization.

Section 3. National coordinating entity for sustainable chemistry

Directs the Office of Science and Technology Policy to create an interagency entity to coordinate Federal programs and activities in support of sustainable chemistry.

Section 4: Roadmap for sustainable chemistry

Directs the interagency entity to consult with stakeholders to develop a framework for describing and assessing sustainable chemistry and to expand and coordinate Federal agency activities in support of sustainable chemistry. This section also directs the interagency entity to submit a report to Congress that summarizes existing Federal agency activities, including financial resources allocated; makes recommendations for future activities; and provides an evaluation of current or future actions to avoid duplicative programs and streamline interagency cooperation.

Section 5: Agency activities in support of sustainable chemistry

Authorizes participating agencies to incorporate sustainable chemistry into their existing research, development, technology transfer, commercialization, education, and training activities. This section also directs participating agencies to submit an annual report to the Office of Management and Budget outlining the activities and funding allocated under the Act. Support authorized under this section shall only be used for precompetitive activities and shall not be used to promote or disparage the sale of a specific product.

Section 6: Partnerships in sustainable chemistry

Authorizes public-private partnerships for collaborative research and development, technology transfer, and training in sustainable chemistry. Eligible partnerships supported under this section must include at least one private sector organization. Support authorized under this section may not be used for regulatory chemical management programs, building construction, or to promote or disparage the sale of a specific product.

Section 7: Prioritization

Directs agencies to prioritize support within relevant programs for activities that achieve the goals outlined in the Act.

Section 8: Rule of Construction

Mandates that this Act will not supersede any State law or action regarding sustainable chemistry.

VIII. COMMITTEE VIEWS

The intent of the Committee is that, for the purposes of this Act, participating Federal agencies integrate sustainable chemistry principles and practices into existing research, development, demonstration, commercialization, education, and public outreach programs and activities and, where appropriate, expand or create new opportunities for funding to support such activities.

IX. COST ESTIMATE

Pursuant to clause 3(c)(2) of rule XIII of the Rules of the House of Representatives, the Committee adopts as its own the estimate of new budget authority, entitlement authority, or tax expenditures or revenues contained in the cost estimate prepared by the Director of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974.

X. CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, November 15, 2019.

Hon. EDDIE BERNICE JOHNSON,
Chairwoman, Committee on Science, Space, and Technology,
House of Representatives, Washington, DC.

DEAR MADAM CHAIRWOMAN: The Congressional Budget Office has prepared the enclosed cost estimate for H.R. 2051, the Sustainable Chemistry Research and Development Act of 2019.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Janani Shankaran.

Sincerely,

MARK P. HADLEY
(For Phillip L. Swagel, Director).

Enclosure.

| H.R. 2051, Sustainable Chemistry Research and Development Act of 2019 | | | |
|--|------|-------------------------------------|---------------|
| As ordered reported by the House Committee on Science, Space, and Technology on October 17, 2019 | | | |
| By Fiscal Year, Millions of Dollars | 2020 | 2020-2024 | 2020-2029 |
| Direct Spending (Outlays) | 0 | 0 | 0 |
| Revenues | 0 | 0 | 0 |
| Increase or Decrease (-) in the Deficit | 0 | 0 | 0 |
| Spending Subject to Appropriation (Outlays) | 2 | 14 | not estimated |
| Statutory pay-as-you-go procedures apply? | No | Mandate Effects | |
| Increases on-budget deficits in any of the four consecutive 10-year periods beginning in 2030? | No | Contains intergovernmental mandate? | No |
| | | Contains private-sector mandate? | No |

H.R. 2051 would direct the Office of Science and Technology Policy (OSTP) to establish an interagency entity—with representation from at least nine federal agencies—to coordinate federal programs and activities in sustainable chemistry. The bill would require the entity to consult with stakeholders, develop metrics to assess sustainable chemistry, and report to the Congress on related initiatives and priorities. Participating agencies also would be required to incorporate sustainable chemistry into existing programs for research and development, demonstration, technology transfer, commercialization, and education and training.

Using information from the Government Accountability Office, CBO expects that many agencies are already conducting activities similar to those required under the bill.¹ On that basis, and using information from OSTP and several of the affected agencies, CBO estimates that each of the nine agencies and OSTP would require, on average, two additional employees at an average annual cost of

¹ See Government Accountability Office, *Chemical Innovation: Technologies to Make Processes and Products More Sustainable*, GAO-18-307 (February 2018), www.gao.gov/products/GAO-18-307.

\$150,000 each to manage and participate in the interagency entity. CBO estimates that implementing the bill would cost \$2 million in 2020 and \$14 million over the 2020–2024 period; such spending would be subject to the availability of appropriated funds.

The CBO staff contact for this estimate is Janani Shankaran. The estimate was reviewed by H. Samuel Papenfuss, Deputy Assistant Director for Budget Analysis.

XI. COMPLIANCE WITH PUBLIC LAW 104–4 (UNFUNDED MANDATES)

H.R. 2051 contains no unfunded mandates.

XII. COMMITTEE OVERSIGHT FINDINGS AND RECOMMENDATIONS

The Committee’s oversight findings and recommendations are reflected in the body of this report.

XIII. STATEMENT ON GENERAL PERFORMANCE GOALS AND OBJECTIVES

Pursuant to clause 3(c) of House rule XIII, the goal of H.R. 2051 is to provide for Federal coordination of activities supporting sustainable chemistry.

XIV. FEDERAL ADVISORY COMMITTEE STATEMENT

H.R. 2051, does not create any advisory committees.

XV. DUPLICATION OF FEDERAL PROGRAMS

Pursuant to clause 3(c)(5) of rule XIII of the Rules of the House of Representatives, the Committee finds that no provision of H.R. 2051 establishes or reauthorizes a program of the federal government known to be duplicative of another federal program, including any program that was included in a report to Congress pursuant to section 21 of Public Law 111–139 or the most recent Catalog of Federal Domestic Assistance.

XVI. EARMARK IDENTIFICATION

Pursuant to clause 9(e), 9(f), and 9(g) of rule XXI, the Committee finds that H.R. 2051 contains no earmarks, limited tax benefits, or limited tariff benefits.

XVII. APPLICABILITY TO THE LEGISLATIVE BRANCH

The Committee finds that H.R. 2051 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

XVIII. STATEMENT ON PREEMPTION OF STATE, LOCAL, OR TRIBAL LAW

This bill is not intended to preempt any state, local, or tribal law.

XIX. CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

This legislation does not amend any existing Federal statute.

XX. EXCHANGE OF COMMITTEE CORRESPONDENCE

EDDIE BERNICE JOHNSON, Texas
CHAIRWOMAN

FRANK D. LUCAS, Oklahoma
RANKING MEMBER

Congress of the United States House of Representatives

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

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November 25, 2019

Chairman John Yarmuth
Committee on the Budget
U.S. House of Representatives
204-E Cannon House Office Building
Washington, DC 20515

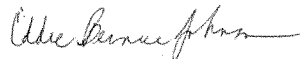
Dear Chairman Yarmuth,

I am writing to you concerning H.R. 2051, the "Sustainable Chemistry Research and Development Act of 2019," which was referred to the Committee on Science, Space, and Technology on April 3, 2019.

I appreciate your willingness to work cooperatively on this bill. I recognize that the bill contains provisions that fall within the jurisdiction of the Committee on the Budget. I acknowledge that your Committee will waive further consideration of H.R. 2051 and that this action is not a waiver of future jurisdictional claims by the Committee on the Budget over this subject matter.

I will make sure to include our exchange of letters in the *Congressional Record* and legislative reports. Thank you for your cooperation on this legislation.

Sincerely,



Eddie Bernice Johnson
Chairwoman

cc: Ranking Member Frank D. Lucas, Committee on Science, Space, and Technology
Ranking Member Steve Womack, Committee on the Budget
Tom Wickham, Parliamentarian

JOHN YARMUTH, KENTUCKY
CHAIRMAN
ELLEN BALIS, STAFF DIRECTOR
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U.S. House of Representatives
COMMITTEE ON THE BUDGET
Washington, DC 20515

November 26, 2019

Chairwoman Eddie Bernice Johnson
Committee on Science, Space, and Technology
U.S. House of Representatives
2321 Rayburn House Office Building
Washington, DC 20515

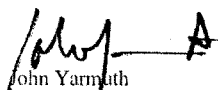
Dear Chairwoman Johnson,

I write to confirm our mutual understanding regarding H.R. 2051, the *Sustainable Chemistry Research and Development Act of 2019*. H.R. 2051 contains provisions that fall within the rule X jurisdiction of the Committee on the Budget. However, the Committee agrees to waive formal consideration of the bill.

The Committee on the Budget takes this action with the mutual understanding that, in doing so, we do not waive any jurisdiction over the subject matter contained in this or similar legislation, and that the Committee will be appropriately consulted and involved as the bill or similar legislation moves forward so that we may address any remaining issues within our jurisdiction. The Committee also reserves the right to seek appointment to any House-Senate conference convened on this legislation or similar legislation and requests your support if such a request is made.

Thank you for agreeing to include our exchange of letters in the *Congressional Record*. I appreciate your cooperation regarding this legislation and look forward to continuing to work with you as this measure moves through the legislative process.

Sincerely,


John Yarmuth
Chairman

cc: Ranking Member Frank D. Lucas, Committee on Science, Space, and Technology
Ranking Member Steve Womack, Committee on the Budget
Tom Wickham, Parliamentarian

XXI. PROCEEDINGS OF THE FULL COMMITTEE MARKUP

MARKUPS:

**H.R. 4091, ARPA-E REAUTHORIZATION
ACT OF 2019; H.R. 2051,
SUSTAINABLE CHEMISTRY RESEARCH
AND DEVELOPMENT ACT OF 2019; AND
H.R. 1709, SCIENTIFIC INTEGRITY ACT**

MARKUP

BEFORE THE

**COMMITTEE ON SCIENCE, SPACE, AND
TECHNOLOGY**

HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

OCTOBER 17, 2019

Serial No. CP: 116-10

Printed for the use of the Committee on Science, Space, and Technology



Available via the World Wide Web: <http://science.house.gov>

U.S. GOVERNMENT PUBLISHING OFFICE

WASHINGTON : 2019

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C O N T E N T S

October 17, 2019

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MARKUPS:
H.R. 4091, ARPA-E REAUTHORIZATION
ACT OF 2019; H.R. 2051,
SUSTAINABLE CHEMISTRY RESEARCH
AND DEVELOPMENT ACT OF 2019; AND
H.R. 1709, SCIENTIFIC INTEGRITY ACT

THURSDAY, OCTOBER 17, 2019

HOUSE OF REPRESENTATIVES,
 COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
Washington, D.C.

The Committee met, pursuant to notice, at 10:02 a.m., in room 2318 of the Rayburn House Office Building, Hon. Eddie Bernice Johnson [Chairwoman of the Committee] presiding.

Chairwoman JOHNSON. Good morning. The Committee will come to order. And without objection, the Chair is authorized to declare recess at any time. Pursuant to Committee rule and House rule XI, the Chair announces that she may postpone roll call votes.

Pursuant to notice, the Committee meets to consider the following measures: H.R. 4091, *ARPA-E Reauthorization Act of 2019*; H.R. 2051, *Sustainable Chemistry Research and Development Act of 2019*; and H.R. 1709, *Scientific Integrity Act*.

Good morning, and welcome to today's markup of three bills. I'm very pleased that we are considering the bipartisan *ARPA-E Reauthorization Act of 2019* this morning. ARPA-E (Advanced Research Projects Agency-Energy) stewards the development of high-risk, high-reward energy technologies that neither the private sector nor other DOE (Department of Energy) programs had previously been willing to support.

After demonstrating a strong record of success over its first 10 years in operation and successfully passing numerous independent, bipartisan, and nonpartisan assessments over the last several years, it is clear that ARPA-E has been a successful program. This bill will enable ARPA-E to truly fulfill its potential to help transform our Nation's energy infrastructure for a far cleaner and more prosperous future.

The next bill we will consider is H.R. 2051, the *Sustainable Chemistry Research and Development Act of 2019*, which is sponsored by the gentleman from Illinois, Mr. Lipinski. The Research and Technology Subcommittee held a hearing in July to explore the challenges and opportunities in sustainable chemistry. The Committee heard from an expert panel of witnesses about the need for more research and technology development, improved chemistry

education, and enhanced Federal agency coordination to encourage the use of sustainable chemicals and processes throughout the chemical science and engineering enterprise. All of the witnesses spoke in support of H.R. 2051.

This bipartisan bill is a good step to advancing the chemical innovations we need to reduce our reliance on substances that are hazardous to human health and the environment. I want to thank Mr. Lipinski for his leadership on this important issue. I'll also take a moment to mention that this bill has a companion in the Senate which is sponsored by Senator Coons, and I know he is committed to moving this legislation forward. Hopefully, he can help us to get this important legislation enacted this Congress.

Last, we will consider H.R. 1709, the *Scientific Integrity Act*. I want to thank Mr. Tonko for his leadership on this legislation, which began in 2016 when he sought to codify the scientific integrity policies put in place under the Obama Administration for all agencies that fund, conduct, and oversee scientific research. These policies were developed in response to a 2010 memorandum from the Office of Science and Technology Policy, which in turn was in response to a requirement in the 2007 *America COMPETES Act*.

This legislation brings our 2007 effort full circle by spelling out in law the core principles of a Federal agency's scientific integrity policy. There are many specific principles addressing openness, transparency, and due process. At their essence, they are about protecting Federal science and scientists from undue political influence and ensuring that the public can trust the science and scientific process informing public policy decisions.

H.R. 1709 has 218 cosponsors and has earned the endorsements of 60 organizations. This is important legislation, regardless of which party is in the White House, and I urge my colleagues to support it.

I'd like to also take a moment to observe that we will be considering extensive amendments to each of these bills, offered by all three bill sponsors. All of these amendments were formed with input from outside stakeholders and also extensive negotiations with Ranking Member Lucas and his staff. I greatly appreciate his efforts to reach bipartisan agreements, and the efforts of both of our staffs to work together.

It sometimes seems like "compromise" has become a dirty word in this town. I will be the first to acknowledge that compromise can be less than satisfying. But I do not believe that our constituents sent us here to posture. There are real problems that need to be solved, and those problems won't be addressed if Democrats and Republicans always go their separate ways. I hope that the Science Committee will continue to be a place where people from both sides of the aisle can come together to pass good legislation, and I look forward to doing that today.

[The prepared statement of Chairwoman Johnson follows:]

Good morning and welcome to today's markup of three good bills.

I am very pleased that we are considering the bipartisan *ARPA-E Reauthorization Act of 2019* this morning. ARPA-E stewards the development of high-risk, high-reward energy technologies that neither the private sector nor other DOE programs had previously been willing or able to support. After demonstrating a strong record of success over its first ten years in operation, and successfully passing numerous independent, bipartisan, and nonpartisan assessments over the last several years,

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Chairwoman JOHNSON. I now recognize our Ranking Member, Mr. Lucas, for his remarks.

Mr. LUCAS. Thank you, Madam Chairwoman.

And today, we will consider three bills. The first is H.R. 4091, the *ARPA-E Reauthorization Act of 2019*. After a lot of negotiation, I'm pleased to say we've reached a bipartisan consensus on this legislation, and I look forward to supporting the bill, as amended. I want to thank the Chairwoman for being willing to come to the table and find a more measured approach we can all agree on.

I believe the additional changes in the manager's amendments that we'll consider today will further strengthen this legislation. With this amendment, we'll double our investment in ARPA-E's high-risk, high-reward research over 5 years, but we'll also establish important guardrails to ensure that we're using our limited research dollars wisely and efficiently.

To be sure, we're not using taxpayer dollars on initiatives that industry can conduct, the bill requires grant applicants to demonstrate they made sufficient attempts to fund projects without Federal dollars. Importantly, this bill will address the problem of duplication within ARPA-E. Like all Federal programs, ARPA-E isn't perfect, and in the past, some initiatives have appeared to duplicate the efforts of other DOE programs. ARPA-E is meant to focus on cutting-edge research to enable transformative technologies. It can't do that if its resources are being drained by duplicative work conducted elsewhere in the Department. This bill will require the Department to prevent duplication between ARPA-E's initiatives and other research across DOE.

I'm also pleased that Chairwoman Johnson has agreed to join me in a GAO (Government Accountability Office) request seeking to add transparency to the program. With this report, I hope we can shed more light on unintended duplication and develop policies to prevent that from occurring in the future. Taken together, these initiatives will strengthen ARPA-E and refocus the program on its intended mission: Serving as the bridge between basic research and industry-led innovation.

The second bill on our agenda today is H.R. 2051, the *Sustainable Chemistry Act of 2019*. H.R. 2051 provides for Federal coordination of research and development for new innovations in chemistry, manufacturing, and materials. This bill continues our Committee's bipartisan commitment to prioritizing fundamental research for new technologies and the ideas that will drive the American economy into the future.

Chemistry is essential to our economy and plays a vital role in helping to solve the greatest challenges facing the Nation and our world. From farming to medicine to the applications we use, chemical manufacturing touches our lives every day. There is market demand for chemical products that use resources more efficiently and are safer for both humans and the environment. Consumers want these products to be just as effective or more effective than traditional chemical products. This bill will help support the research, training, and standards needed to meet these demands.

It's rare that a bill has the endorsement of both the chemical companies and the environmental advocates. I thank the bill's sponsors, Representative Dan Lipinski and Representative John Moolenaar, for their leadership on this issue and for developing a good consensus bill. I encourage my colleagues to support it.

The final bill on our agenda today is the *Scientific Integrity Act*. I will speak more about that when we consider the bill and I'll offer an amendment. But in the meantime, I appreciate Chairwoman Johnson and the bill's sponsor Mr. Tonko for working with us on a compromise that will be able to move that bill forward with my support.

In the meantime, I look forward to considering our bipartisan bills on ARPA-E and sustainable chemistry. Thank you, Madam Chair, and I yield back.

[The prepared statement of Mr. Lucas follows:]

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The first is H.R. 4091, the *ARPA-E Reauthorization Act of 2019*. After a lot of negotiation, I'm pleased to say we've reached a bipartisan consensus on this legislation, and I look forward to supporting the bill as amended.

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In the meantime, I look forward to considering our bipartisan bills on ARPA-E and sustainable chemistry. Thank you and I yield back.

H.R. 4091

Chairwoman JOHNSON. Thank you very much.

We will now consider H.R. 4091, the *ARPA-E Reauthorization Act of 2019*. The clerk will report the bill.

The CLERK. H.R. 4091, a bill to amend the *America COMPETES Act* to reauthorize the ARPA-E program and for other purposes.

[The bill follows:]

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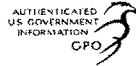
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H.R. 2051

Chairwoman JOHNSON. We will now consider H.R. 2051, the *Sustainable Chemistry Research and Development Act of 2019*. The clerk will report the bill.

The CLERK. H.R. 2051, a bill to provide for Federal coordination of activities supporting sustainable chemistry and for other purposes.

[The bill follows:]



116TH CONGRESS
1ST SESSION

H. R. 2051

To provide for Federal coordination of activities supporting sustainable chemistry, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

APRIL 3, 2019

Mr. LIPINSKI (for himself and Mr. MOOLENAAR) introduced the following bill; which was referred to the Committee on Science, Space, and Technology, and in addition to the Committee on the Budget, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

A BILL

To provide for Federal coordination of activities supporting sustainable chemistry, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Sustainable Chemistry
5 Research and Development Act of 2019”.

6 **SEC. 2. FINDINGS.**

7 Congress finds that—

8 (1) Congress recognized the importance and
9 value of sustainable chemistry and the role of the

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1 Federal Government in section 114 of the American
2 Innovation and Competitiveness Act (Public Law
3 114–329);

4 (2) sustainable chemistry and materials trans-
5 formation is a key value contributor to business
6 competitiveness across many industrial and con-
7 sumer sectors;

8 (3) companies across hundreds of supply chains
9 critical to the American economy are seeking to re-
10 duce costs and open new markets through innova-
11 tions in manufacturing and materials, and are in
12 need of new innovations in chemistry, including sus-
13 tainable chemistry;

14 (4) sustainable chemistry can improve the effi-
15 ciency with which natural resources are used to meet
16 human needs for chemical products while avoiding
17 environmental harm, reduce or eliminate the emis-
18 sions of and exposures to hazardous substances,
19 minimize the use of resources, and benefit the econ-
20 omy, people, and the environment; and

21 (5) a recent report by the Government Account-
22 ability Office (GAO–18–307) found that the Federal
23 Government could play an important role in helping
24 realize the full innovation and market potential of
25 sustainable chemistry technologies, including

1 through a coordinated national effort on sustainable
2 chemistry and standardized tools and definitions to
3 support sustainable chemistry research, development,
4 demonstration, and commercialization.

5 **SEC. 3. NATIONAL COORDINATING ENTITY FOR SUSTAIN-**
6 **ABLE CHEMISTRY.**

7 (a) ESTABLISHMENT.—Not later than 180 days after
8 the date of enactment of this Act, the Director of the Of-
9 fice of Science and Technology Policy shall convene an
10 interagency entity (referred to in this Act as the “Entity”)
11 under the National Science and Technology Council with
12 the responsibility to coordinate Federal programs and ac-
13 tivities in support of sustainable chemistry, including
14 those described in sections 5 and 6.

15 (b) COORDINATION WITH EXISTING GROUPS.—In
16 convening the Entity, the Director of the Office of Science
17 and Technology Policy shall consider overlap and possible
18 coordination with existing committees, subcommittees, or
19 other groups of the National Science and Technology
20 Council, such as—

- 21 (1) the Committee on Environment, Natural
22 Resources, and Sustainability;
- 23 (2) the Committee on Technology;
- 24 (3) the Committee on Science; or
- 25 (4) related groups or subcommittees.

1 (c) CO-CHAIRS.—The Entity shall be co-chaired by
2 representatives from the Environmental Protection Agen-
3 cy, the National Institute of Standards and Technology,
4 and the National Science Foundation.

5 (d) AGENCY PARTICIPATION.—The Entity shall in-
6 clude representatives, including subject matter experts,
7 from the Environmental Protection Agency, the National
8 Institute of Standards and Technology, the National
9 Science Foundation, the Department of Energy, the De-
10 partment of Agriculture, the Department of Defense, the
11 National Institutes of Health, the Centers for Disease
12 Control and Prevention, the Food and Drug Administra-
13 tion, and other related Federal agencies, as appropriate.

14 **SEC. 4. ROADMAP FOR SUSTAINABLE CHEMISTRY.**

15 (a) ROADMAP.—Not later than 2 years after the date
16 of enactment of this Act, the Entity shall—

17 (1) develop a working framework of attributes
18 characterizing sustainable chemistry, as described in
19 subsection (b);

20 (2) assess the state of sustainable chemistry in
21 the United States as a key benchmark from which
22 progress under the activities described in this Act
23 can be measured, including assessing key sectors of
24 the United States economy, key technology plat-
25 forms, and barriers to innovation;

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1 (3) coordinate and support Federal research,
2 development, demonstration, technology transfer,
3 commercialization, education, and training efforts in
4 sustainable chemistry, including budget coordination
5 and support for public-private partnerships, as ap-
6 propriate;

7 (4) identify methods by which the Federal
8 agencies can facilitate the development of incentives
9 for development, consideration and use of sustain-
10 able chemistry processes and products, including in-
11 novative financing mechanisms;

12 (5) identify major scientific challenges, road-
13 blocks, or hurdles to transformational progress in
14 improving the sustainability of the chemical sciences;
15 and

16 (6) identify other opportunities for expanding
17 Federal efforts in support of sustainable chemistry.

18 (b) ATTRIBUTES CHARACTERIZING SUSTAINABLE
19 CHEMISTRY.—The Entity shall develop a working frame-
20 work of attributes characterizing sustainable chemistry for
21 the purposes of carrying out the Act. In developing this
22 framework, the Entity shall—

23 (1) seek advice and input from stakeholders as
24 described in subsection (c);

1 (2) consider existing definitions of or frame-
2 works characterizing sustainable or green chemistry
3 already in use at Federal agencies;

4 (3) consider existing definitions of or frame-
5 works characterizing sustainable or green chemistry
6 already in use by international organizations of
7 which the United States is a member, such as the
8 Organisation for Economic Co-operation and Devel-
9 opment; and

10 (4) consider any other appropriate existing defi-
11 nitions of or frameworks characterizing sustainable
12 or green chemistry.

13 (e) CONSULTATION.—In carrying out the duties de-
14 scribed in subsections (a) and (b), the Entity shall consult
15 and coordinate with stakeholders qualified to provide ad-
16 vice and information to guide Federal activities related to
17 sustainable chemistry through workshops, requests for in-
18 formation, and other mechanisms as necessary. The stake-
19 holders shall include representatives from—

20 (1) business and industry (including trade asso-
21 ciations and small- and medium-sized enterprises
22 from across the value chain);

23 (2) the scientific community (including the Na-
24 tional Academies of Sciences, Engineering, and Med-
25 icine, scientific professional societies, and academia);

1 (3) the defense community;

2 (4) State, tribal, and local governments, includ-
3 ing nonregulatory State or regional sustainable
4 chemistry programs, as appropriate;

5 (5) nongovernmental organizations; and

6 (6) other appropriate organizations.

7 (d) REPORT TO CONGRESS.—

8 (1) IN GENERAL.—Not later than 3 years after
9 the date of enactment of this Act, the Entity shall
10 submit a report to the Committee on Environment
11 and Public Works, the Committee on Commerce,
12 Science, and Transportation, and the Committee on
13 Appropriations of the Senate, and the Committee on
14 Science, Space, and Technology, the Committee on
15 Energy and Commerce, and the Committee on Ap-
16 propriations of the House of Representatives. In ad-
17 dition to the elements described in subsections (a)
18 and (b), the report shall include—

19 (A) a summary of federally funded, sus-
20 tainable chemistry research, development, dem-
21 onstration, technology transfer, commercializa-
22 tion, education, and training activities;

23 (B) a summary of the financial resources
24 allocated to sustainable chemistry initiatives;

1 (C) an assessment of the current state of
2 sustainable chemistry in the United States, in-
3 cluding the role that Federal agencies are play-
4 ing in supporting it;

5 (D) an analysis of the progress made to-
6 ward achieving the goals and priorities of this
7 Act, and recommendations for future program
8 activities;

9 (E) an assessment of the benefits of ex-
10 panding existing, federally supported, regional
11 innovation and manufacturing hubs to include
12 sustainable chemistry and the value of directing
13 the creation of 1 or more dedicated sustainable
14 chemistry centers of excellence or hubs; and

15 (F) an evaluation of steps taken and fu-
16 ture strategies to avoid duplication of efforts,
17 streamline interagency coordination, facilitate
18 information sharing, and spread best practices
19 among participating agencies.

20 (2) SUBMISSION TO GAO.—The Entity shall
21 also submit the report described in paragraph (1) to
22 the Comptroller General of the United States for
23 consideration in future Congressional inquiries.

1 **SEC. 5. AGENCY ACTIVITIES IN SUPPORT OF SUSTAINABLE**
2 **CHEMISTRY.**

3 (a) IN GENERAL.—The agencies participating in the
4 Entity shall carry out activities in support of sustainable
5 chemistry, as appropriate to the specific mission and pro-
6 grams of each agency.

7 (b) ACTIVITIES.—The activities described in sub-
8 section (a) shall—

9 (1) incorporate sustainable chemistry into exist-
10 ing research, development, demonstration, tech-
11 nology transfer, commercialization, education, and
12 training programs, that the agency determines to be
13 relevant, including consideration of—

14 (A) merit-based competitive grants to indi-
15 vidual investigators and teams of investigators,
16 including, to the extent practicable, early career
17 investigators for research and development;

18 (B) grants to fund collaborative research
19 and development partnerships among univer-
20 sities, industry, and nonprofit organizations;

21 (C) coordination of sustainable chemistry
22 research, development, demonstration, and tech-
23 nology transfer conducted at Federal labora-
24 tories and agencies;

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1 (D) incentive prize competitions and chal-
2 lenges in coordination with such existing Fed-
3 eral agency programs; and

4 (E) grants, loans, and loan guarantees to
5 aid in the technology transfer and commer-
6 cialization of sustainable chemicals, materials,
7 processes, and products;

8 (2) collect and disseminate information on sus-
9 tainable chemistry research, development, technology
10 transfer, and commercialization, including informa-
11 tion on accomplishments and best practices;

12 (3) within education and training programs, ex-
13 pand the education and training of undergraduate
14 and graduate students and professional scientists
15 and engineers, and other professionals involved in
16 materials specification in sustainable chemistry and
17 engineering, including through partnerships with in-
18 dustry as described in section 6;

19 (4) as relevant to an agency's programs, exam-
20 ine methods by which the Federal agencies, in col-
21 laboration and consultation with the National Insti-
22 tute of Standards and Technology, can facilitate the
23 development or recognition of validated, standard-
24 ized tools for performing sustainability assessments
25 of chemistry processes or products;

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1 (5) through programs identified by an agency,
2 support (including through technical assistance, par-
3 ticipation, financial support, communications tools,
4 awards, or other forms of support) outreach and dis-
5 semination of sustainable chemistry advances such
6 as non-Federal symposia, forums, conferences, and
7 publications in collaboration with, as appropriate, in-
8 dustry, academia, scientific and professional soci-
9 eties, and other relevant groups;

10 (6) provide for public input and outreach to be
11 integrated into the activities described in this section
12 by the convening of public discussions, through
13 mechanisms such as public meetings, consensus con-
14 ferences, and educational events, as appropriate;

15 (7) within each agency, develop metrics to track
16 the outputs and outcomes of the programs supported
17 by that agency; and

18 (8) incentivize or recognize actions that advance
19 sustainable chemistry products, processes, or initia-
20 tives, including through the establishment of a na-
21 tionally recognized awards program through the En-
22 vironmental Protection Agency to identify, publicize,
23 and celebrate innovations in sustainable chemistry
24 and chemical technologies.

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1 (c) LIMITATIONS.—Financial support provided under
2 this section shall—

3 (1) be available only for pre-competitive activi-
4 ties; and

5 (2) not be used to promote the sale of a specific
6 product, process, or technology, or to disparage a
7 specific product, process, or technology.

8 (d) AGENCY BUDGET REQUESTS.—

9 (1) IN GENERAL.—Each Federal agency and
10 department participating in the activities described
11 in this section shall, as part of its annual request for
12 appropriations to the Office of Management and
13 Budget, submit a report to the Office of Manage-
14 ment and Budget that—

15 (A) identifies the activities of the agency or
16 department that contribute directly to these ac-
17 tivities; and

18 (B) estimates the portion of the agency or
19 department's request for appropriations that is
20 intended to be allocated to those activities.

21 (2) ANNUAL BUDGET REQUEST TO CON-
22 GRESS.—The President shall include in the annual
23 budget request to Congress a statement of the por-
24 tion of the annual budget request for each agency or

1 department that will be allocated to activities under-
2 taken pursuant to this section.

3 **SEC. 6. PARTNERSHIPS IN SUSTAINABLE CHEMISTRY.**

4 (a) IN GENERAL.—The agencies participating in the
5 Entity may facilitate and support, through financial, tech-
6 nical, or other assistance, the creation of partnerships be-
7 tween institutions of higher education, nongovernmental
8 organizations, consortia, or companies across the value
9 chain in the chemical industry, including small- and me-
10 dium-sized enterprises, to—

11 (1) create collaborative sustainable chemistry
12 research, development, demonstration, technology
13 transfer, and commercialization programs; and

14 (2) train students and retrain professional sci-
15 entists, engineers, and others involved in materials
16 specification on the use of sustainable chemistry con-
17 cepts and strategies by methods, including—

18 (A) developing or recognizing curricular
19 materials and courses for undergraduate and
20 graduate levels and for the professional develop-
21 ment of scientists, engineers, and others in-
22 volved in materials specification; and

23 (B) publicizing the availability of profes-
24 sional development courses in sustainable chem-

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1 istry and recruiting professionals to pursue
2 such courses.

3 (b) PRIVATE SECTOR PARTICIPATION.—To be eligi-
4 ble for support under this section, a partnership in sus-
5 tainable chemistry shall include at least one private sector
6 organization.

7 (c) SELECTION OF PARTNERSHIPS.—In selecting
8 partnerships for support under this section, the agencies
9 participating in the Entity shall also consider the extent
10 to which the applicants are willing and able to dem-
11 onstrate evidence of support for, and commitment to, the
12 goals outlined in the roadmap and report described in sec-
13 tion 4.

14 (d) PROHIBITED USE OF FUNDS.—Financial support
15 provided under this section may not be used—

16 (1) to support or expand a regulatory chemical
17 management program at an implementing agency
18 under a State law;

19 (2) to construct or renovate a building or struc-
20 ture; or

21 (3) to promote the sale of a specific product,
22 process, or technology, or to disparage a specific
23 product, process, or technology.

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1 **SEC. 7. PRIORITIZATION.**

2 In carrying out this Act, the Entity shall focus its
3 support for sustainable chemistry activities on those that
4 achieve, to the highest extent practicable, the goals out-
5 lined in the Act.

6 **SEC. 8. RULE OF CONSTRUCTION.**

7 Nothing in this Act shall be construed to alter or
8 amend any State law or action with regard to sustainable
9 chemistry or green chemistry, as defined by the State.

○

Chairwoman JOHNSON. Without objection, the bill is considered as read and open to amendment at any point.

I recognize Mr. Lipinski to speak on the bill.

Mr. LIPINSKI. Thank you, Chairwoman Johnson.

I was proud to introduce H.R. 2051, the *Sustainable Chemistry R&D Act*, along with my Republican Chemistry Caucus Co-Chair Mr. Moolenaar. I thank many of my colleagues on this Committee, including Chairwoman Johnson, for cosponsoring this bipartisan amendment.

I've long supported efforts to coordinate Federal programs that support basic research at our national labs and universities because coordination helps maximize the return on our investments. The *Sustainable Chemistry R&D Act* does this. I've also made it a priority to work on ways to increase the transition of research conducted in these labs into new and better products. The *Sustainable Chemistry R&D Act* does this also. Products we interact with in nearly every sector of the economy, including clean supplies, dyes, pesticides, and flame retardants, rely on innovations in chemistry.

As Co-Chair of the Chemistry Caucus, I hear from industry that sustainable chemistry is a field particularly in need of Federal attention. American businesses face global competition to meet consumer demand for products that have been designed with forethought to their impacts. We want affordable products that meet our needs and protect human health and our environment. It is better for our environment that products are created from sustainably sourced materials. It is better to use less energy and safer chemicals in the production process. And it is far better to minimize harmful waste than to try to clean it up later.

Basic research in sustainable chemistry informs industrial design of products with these principles in mind. This is an opportunity for Federal, academic, and industry partners to work together in a way that will grow our economy and improve public health in our environment.

H.R. 2051 highlights the importance of sustainable chemistry and directs coordination of programs to support sustainable chemistry across the Federal Government. Specifically, the bill establishes an interagency coordination entity under the direction of the Office of Science and Technology Policy to develop a national roadmap for sustainable chemistry. This roadmap will include a definition of sustainable chemistry, a framework for characterizing sustainability, and assessment of the state of sustainable chemistry in the U.S., including major challenges and roadblocks. In carrying out those activities, the interagency coordination entity is directed to consult with external stakeholders, including industry; the scientific community; State, tribal, and local governments; and non-governmental organizations.

This bill also authorizes relevant Federal agencies to incorporate sustainable chemistry principles in their existing research, development, demonstration, tech transfer, education, and training activities.

Finally, this bill authorizes the creation of new public-private partnerships in sustainable chemistry, allowing for new research to directly inform industrial innovation and for students to gain experience addressing industrial challenges.

I ask my colleagues to support this bipartisan bill to strengthen the U.S. chemical industry by providing the tools needed to lead the world to a safer environment.

With that, I will yield back.

Chairwoman JOHNSON. Thank you, Mr. Lipinski.

Anyone else wishing to be recognized?

Now, we will proceed with any amendments in the order of the roster.

There's an amendment in the nature of a substitute. The first amendment on the roster is an amendment offered by the gentleman from Illinois, and he is recognized to offer his amendment.

Mr. LIPINSKI. Madam Chair, I have an amendment at the desk.

Chairwoman JOHNSON. The clerk will report the amendment.

The CLERK. Amendment No. 1, amendment in the nature of a substitute to H.R. 2051—

[The amendment of Mr. Lipinski follows:]

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1 need of new innovations in chemistry, including sus-
2 tainable chemistry;

3 (4) sustainable chemistry can improve the effi-
4 ciency with which natural resources are used to meet
5 human needs for chemical products while avoiding
6 environmental harm, reduce or eliminate the emis-
7 sions of and exposures to hazardous substances,
8 minimize the use of resources, and benefit the econ-
9 omy, people, and the environment; and

10 (5) a recent report by the Government Account-
11 ability Office (GAO-18-307) found that the Federal
12 Government could play an important role in helping
13 realize the full innovation and market potential of
14 sustainable chemistry technologies, including
15 through a coordinated national effort on sustainable
16 chemistry and standardized tools and definitions to
17 support sustainable chemistry research, development,
18 demonstration, and commercialization.

19 **SEC. 3. NATIONAL COORDINATING ENTITY FOR SUSTAIN-**
20 **ABLE CHEMISTRY.**

21 (a) **ESTABLISHMENT.**—Not later than 180 days after
22 the date of enactment of this Act, the Director of the Of-
23 fice of Science and Technology Policy shall convene an
24 interagency entity (referred to in this Act as the “Entity”)
25 under the National Science and Technology Council with

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1 the responsibility to coordinate Federal programs and ac-
2 tivities in support of sustainable chemistry, including
3 those described in sections 5 and 6.

4 (b) COORDINATION WITH EXISTING GROUPS.—In
5 convening the Entity, the Director of the Office of Science
6 and Technology Policy shall consider overlap and possible
7 coordination with existing committees, subcommittees, or
8 other groups of the National Science and Technology
9 Council, such as—

10 (1) the Committee on Environment;

11 (2) the Committee on Technology;

12 (3) the Committee on Science; or

13 (4) related groups or subcommittees.

14 (c) CO-CHAIRS.—The Entity shall be co-chaired by
15 the Office of Science and Technology Policy and a rep-
16 resentative from the Environmental Protection Agency,
17 the National Institute of Standards and Technology, the
18 National Science Foundation, or the Department of En-
19 ergy, as selected by the Director of the Office of Science
20 and Technology Policy.

21 (d) AGENCY PARTICIPATION.—The Entity shall in-
22 clude representatives, including subject matter experts,
23 from the Environmental Protection Agency, the National
24 Institute of Standards and Technology, the National
25 Science Foundation, the Department of Energy, the De-

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1 partment of Agriculture, the Department of Defense, the
2 National Institutes of Health, the Centers for Disease
3 Control and Prevention, the Food and Drug Administra-
4 tion, and other related Federal agencies, as appropriate.

5 (e) TERMINATION.—The Entity shall terminate on
6 the date that is 10 years after the date of enactment of
7 this Act.

8 **SEC. 4. ROADMAP FOR SUSTAINABLE CHEMISTRY.**

9 (a) ROADMAP.—Not later than 2 years after the date
10 of enactment of this Act, the Entity shall—

11 (1) consult with relevant stakeholders including
12 representatives from industry, academia, the Federal
13 Government, and international entities to develop
14 and update as needed a consensus definition of “sus-
15 tainable chemistry” to guide the activities under this
16 Act;

17 (2) develop a working framework of attributes
18 characterizing and metrics for assessing sustainable
19 chemistry, as described in subsection (b);

20 (3) assess the state of sustainable chemistry in
21 the United States as a key benchmark from which
22 progress under the activities described in this Act
23 can be measured, including assessing key sectors of
24 the United States economy, key technology plat-

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1 forms, commercial priorities, and barriers to innova-
2 tion;

3 (4) coordinate and support Federal research,
4 development, demonstration, technology transfer,
5 commercialization, education, and training efforts in
6 sustainable chemistry, including budget coordination
7 and support for public-private partnerships, as ap-
8 propriate;

9 (5) identify methods by which the Federal
10 agencies can facilitate the development of incentives
11 for development, consideration and use of sustain-
12 able chemistry processes and products, including in-
13 novative financing mechanisms;

14 (6) identify major scientific challenges, road-
15 blocks, or hurdles to transformational progress in
16 improving the sustainability of the chemical sciences;
17 and

18 (7) identify other opportunities for expanding
19 Federal efforts in support of sustainable chemistry.

20 (b) CHARACTERIZING AND ASSESSING SUSTAINABLE
21 CHEMISTRY.—The Entity shall develop a working frame-
22 work of attributes characterizing and metrics for assessing
23 sustainable chemistry for the purposes of carrying out the
24 Act. In developing this framework, the Entity shall—

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1 (1) seek advice and input from stakeholders as
2 described in subsection (e);

3 (2) consider existing definitions of or frame-
4 works characterizing and metrics for assessing sus-
5 tainable chemistry already in use at Federal agen-
6 cies;

7 (3) consider existing definitions of or frame-
8 works characterizing and metrics for assessing sus-
9 tainable chemistry already in use by international
10 organizations of which the United States is a mem-
11 ber, such as the Organisation for Economic Co-oper-
12 ation and Development; and

13 (4) consider any other appropriate existing defi-
14 nitions of or frameworks characterizing and metrics
15 for assessing sustainable chemistry.

16 (c) CONSULTATION.—In carrying out the duties de-
17 scribed in subsections (a) and (b), the Entity shall consult
18 with stakeholders qualified to provide advice and informa-
19 tion to guide Federal activities related to sustainable
20 chemistry through workshops, requests for information,
21 and other mechanisms as necessary. The stakeholders
22 shall include representatives from—

23 (1) business and industry (including trade asso-
24 ciations and small- and medium-sized enterprises
25 from across the value chain);

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1 (2) the scientific community (including the Na-
2 tional Academies of Sciences, Engineering, and Med-
3 icine, scientific professional societies, and academia);

4 (3) the defense community;

5 (4) State, tribal, and local governments, includ-
6 ing nonregulatory State or regional sustainable
7 chemistry programs, as appropriate;

8 (5) nongovernmental organizations; and

9 (6) other appropriate organizations.

10 (d) REPORT TO CONGRESS.—

11 (1) IN GENERAL.—Not later than 3 years after
12 the date of enactment of this Act, the Entity shall
13 submit a report to the Committee on Environment
14 and Public Works, the Committee on Commerce,
15 Science, and Transportation, and the Committee on
16 Appropriations of the Senate, and the Committee on
17 Science, Space, and Technology, the Committee on
18 Energy and Commerce, and the Committee on Ap-
19 propriations of the House of Representatives. In ad-
20 dition to the elements described in subsections (a)
21 and (b), the report shall include—

22 (A) a summary of federally funded, sus-
23 tainable chemistry research, development, dem-
24 onstration, technology transfer, commercializa-
25 tion, education, and training activities;

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1 (B) a summary of the financial resources
2 allocated to sustainable chemistry initiatives;

3 (C) an assessment of the current state of
4 sustainable chemistry in the United States, in-
5 cluding the role that Federal agencies are play-
6 ing in supporting it;

7 (D) an analysis of the progress made to-
8 ward achieving the goals and priorities of this
9 Act, and recommendations for future program
10 activities;

11 (E) an assessment of the benefits of ex-
12 panding existing, federally supported, regional
13 innovation and manufacturing hubs, centers,
14 and institutes to include sustainable chemistry
15 and the value of directing the creation of 1 or
16 more dedicated sustainable chemistry centers of
17 excellence, hubs, or institutes; and

18 (F) an evaluation of steps taken and fu-
19 ture strategies to avoid duplication of efforts,
20 streamline interagency coordination, facilitate
21 information sharing, and spread best practices
22 among participating agencies.

23 (2) SUBMISSION TO GAO.—The Entity shall
24 also submit the report described in paragraph (1) to

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1 the Comptroller General of the United States for
2 consideration in future Congressional inquiries.

3 **SEC. 5. AGENCY ACTIVITIES IN SUPPORT OF SUSTAINABLE**
4 **CHEMISTRY.**

5 (a) IN GENERAL.—The agencies participating in the
6 Entity shall carry out activities in support of sustainable
7 chemistry, as appropriate to the specific mission and pro-
8 grams of each agency.

9 (b) ACTIVITIES.—The activities described in sub-
10 section (a) shall—

11 (1) incorporate sustainable chemistry into exist-
12 ing research, development, demonstration, tech-
13 nology transfer, commercialization, education, and
14 training programs, that the agency determines to be
15 relevant, including consideration of—

16 (A) merit-based competitive grants to indi-
17 vidual investigators and teams of investigators,
18 including, to the extent practicable, early career
19 investigators for research and development;

20 (B) grants to fund collaborative research
21 and development partnerships among univer-
22 sities, industry, and nonprofit organizations;

23 (C) coordination of sustainable chemistry
24 research, development, demonstration, and tech-

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1 nology transfer conducted at Federal labora-
2 tories and agencies;

3 (D) incentive prize competitions and chal-
4 lenges in coordination with such existing Fed-
5 eral agency programs; and

6 (E) grants, loans, and loan guarantees to
7 aid in the technology transfer and commer-
8 cialization of sustainable chemicals, materials,
9 processes, and products;

10 (2) collect and disseminate information on sus-
11 tainable chemistry research, development, technology
12 transfer, and commercialization, including informa-
13 tion on accomplishments and best practices;

14 (3) raise awareness of sustainable chemistry
15 concepts through public outreach activities;

16 (4) expand the education and training of stu-
17 dents at all levels of education, professional sci-
18 entists and engineers, and other professionals in-
19 volved in all aspects of sustainable chemistry and en-
20 gineering appropriate to that level of education and
21 training, including through—

22 (A) partnerships with industry as de-
23 scribed in section 6;

24 (B) support for the integration of sustain-
25 able chemistry principles into elementary, sec-

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1 ondary, undergraduate, and graduate chemistry
2 and chemical engineering curriculum and re-
3 search training, as appropriate to that level of
4 education and training; and

5 (C) support for integration of sustainable
6 chemistry principles into existing or new profes-
7 sional development opportunities for profes-
8 sionals including teachers, faculty, and individ-
9 uals involved in laboratory research, (product
10 development, materials specification and test-
11 ing, life cycle analysis, and management);

12 (5) as relevant to an agency's programs, exam-
13 ine methods by which the Federal agencies, in col-
14 laboration and consultation with the National Insti-
15 tute of Standards and Technology, may facilitate the
16 development or recognition of validated, standard-
17 ized tools for performing sustainability assessments
18 of chemistry processes or products;

19 (6) through programs identified by an agency,
20 support (including through technical assistance, par-
21 ticipation, financial support, communications tools,
22 awards, or other forms of support) outreach and dis-
23 semination of sustainable chemistry advances such
24 as non-Federal symposia, forums, conferences, and
25 publications in collaboration with, as appropriate, in-

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1 industry, academia, scientific and professional soci-
2 eties, and other relevant groups;

3 (7) provide for public input and outreach to be
4 integrated into the activities described in this section
5 by the convening of public discussions, through
6 mechanisms such as public meetings, consensus con-
7 ferences, and educational events, as appropriate;

8 (8) within each agency, develop metrics to track
9 the outputs and outcomes of the programs supported
10 by that agency; and

11 (9) incentivize or recognize actions that advance
12 sustainable chemistry products, processes, or initia-
13 tives, including through the establishment of a na-
14 tionally recognized awards program through the En-
15 vironmental Protection Agency to identify, publicize,
16 and celebrate innovations in sustainable chemistry
17 and chemical technologies.

18 (c) LIMITATIONS.—Financial support provided under
19 this section shall—

20 (1) be available only for pre-competitive activi-
21 ties; and

22 (2) not be used to promote the sale of a specific
23 product, process, or technology, or to disparage a
24 specific product, process, or technology.

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1 (d) AGENCY BUDGET REPORT.—For each of fiscal
2 years 2021 through 2030, not later than 90 days after
3 submission of the President's annual budget request, the
4 Entity shall prepare and submit to the Committee on En-
5 vironment and Public Works, the Committee on Com-
6 merce, Science, and Transportation, and the Committee
7 on Appropriations of the Senate, and the Committee on
8 Science, Space, and Technology, the Committee on Energy
9 and Commerce, and the Committee on Appropriations of
10 the House of Representatives a report that includes a
11 summarized agency budget in support of the activities
12 under this Act for the fiscal year to which such budget
13 request applies, and for the then current fiscal year, in-
14 cluding a breakout of spending for each agency partici-
15 pating in such activities.

16 **SEC. 6. PARTNERSHIPS IN SUSTAINABLE CHEMISTRY.**

17 (a) IN GENERAL.—The agencies participating in the
18 Entity may facilitate and support, through financial, tech-
19 nical, or other assistance, the creation of partnerships be-
20 tween institutions of higher education, nongovernmental
21 organizations, consortia, or companies across the value
22 chain in the chemical industry, including small- and me-
23 dium-sized enterprises, to—

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1 (1) create collaborative sustainable chemistry
2 research, development, demonstration, technology
3 transfer, and commercialization programs; and

4 (2) train students and retrain professional sci-
5 entists, engineers, and others involved in materials
6 specification on the use of sustainable chemistry con-
7 cepts and strategies by methods, including—

8 (A) developing or recognizing curricular
9 materials and courses for undergraduate and
10 graduate levels and for the professional develop-
11 ment of scientists, engineers, and others in-
12 volved in materials specification; and

13 (B) publicizing the availability of profes-
14 sional development courses in sustainable chem-
15 istry and recruiting professionals to pursue
16 such courses.

17 (b) PRIVATE SECTOR PARTICIPATION.—To be eligi-
18 ble for support under this section, a partnership in sus-
19 tainable chemistry shall include at least one private sector
20 organization.

21 (c) SELECTION OF PARTNERSHIPS.—In selecting
22 partnerships for support under this section, the agencies
23 participating in the Entity shall also consider the extent
24 to which the applicants are willing and able to dem-
25 onstrate evidence of support for, and commitment to, the

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1 goals outlined in the roadmap and report described in sec-
2 tion 4.

3 (d) PROHIBITED USE OF FUNDS.—Financial support
4 provided under this section may not be used—

5 (1) to support or expand a regulatory chemical
6 management program at an implementing agency
7 under a State law;

8 (2) to construct or renovate a building or struc-
9 ture; or

10 (3) to promote the sale of a specific product,
11 process, or technology, or to disparage a specific
12 product, process, or technology.

13 **SEC. 7. PRIORITIZATION.**

14 In carrying out this Act, the Entity shall focus its
15 support for sustainable chemistry activities on those that
16 achieve, to the highest extent practicable, the goals out-
17 lined in the Act.

18 **SEC. 8. RULE OF CONSTRUCTION.**

19 Nothing in this Act shall be construed to alter or
20 amend any State law or action with regard to sustainable
21 chemistry, as defined by the State.



Chairwoman JOHNSON. I ask unanimous consent to dispense with the reading. Without objection, so ordered.

I recognize the gentleman to explain his amendment for 5 minutes.

Mr. LIPINSKI. Thank you, Madam Chair.

My amendment in the nature of a substitute makes minor but important changes to this bill in response to feedback received since it was introduced. For example, during a hearing of the Subcommittee on Research and Technology, we heard about a need for a consensus definition for sustainable chemistry. Therefore, this amendment specifically directs their interagency coordination entity to develop and update this definition to guide activities described in the bill.

Similarly, this amendment requires the development of metrics for assessing sustainability so we can ensure that the activities described in the bill continue moving in the right direction. It also includes a 10-year sunset for the entity to complete the coordination efforts.

Finally, this amendment broadens the authorization for Agency activities to promote sustainable chemistry principles and public outreach, as well as an education curriculum from elementary school through graduate training. I want to emphasize that students of all ages can benefit from knowing more about sustainable chemistry.

I'd like to thank my colleagues on both sides of the aisle, as well as outside experts for engaging with my office's development of this amendment, which will improve the bill. I urge my colleagues to support this amendment and yield back the balance of my time.

Chairwoman JOHNSON. Any further discussion? Any requests for time?

If there is no further discussion, then the vote occurs on the amendment.

All those in favor, say aye.

Those opposed, no.

The ayes have it, and the amendment is agreed to.

A reporting quorum being present, I move that the Committee on Science, Space, and Technology report H.R. 2051, as amended, to the House with the recommendation that it be approved.

Those in favor of the motion will signify by saying aye.

Those opposed, nay.

The ayes have it, and the bill is reported favorably.

Without objection, the motion to reconsider is laid on the table, and I ask unanimous consent for staff to be authorized to make any necessary technical and conforming changes to the bill. Without objection, so ordered.

Members will have 2 subsequent calendar days in which to submit supplemental minority or additional views on this measure.

H.R. 1709

Chairwoman JOHNSON. We will now consider H.R. 1709, the *Scientific Integrity Act*. The clerk will report the bill.

The CLERK. H.R. 1709, a bill to amend the *America COMPETES Act* to establish certain scientific integrity policies for Federal agencies that fund, conduct, or oversee scientific—

[The bill follows:]